NATIONAL TRANSPORTATION SAFETY BOARD

Office of Research and Engineering
Materials Laboratory Division
Washington, D.C. 20594

January 8, 2009

MATERIALS LABORATORY FACTUAL REPORT Report No. 08-132

A. ACCIDENT

Place	: Phoenixville, PA
Date	: 9/7/2008
Vehicle	: Lindstrand Balloon
NTSB No.	: NYC08FA307
Investigator	: Shawn Etcher

B. COMPONENTS EXAMINED

Fuel/gas shutoff valve; associate hoses

C. DETAILS OF THE EXAMINATION

Components from the fuel delivery system were submitted for examination. The components included a tank valve, various hose fittings and hoses.

The following is a description of the components in the delivery system starting with the control valve and continuing on to the respective components in the direction of fuel flow. The tank valve, as shown in Figure 1, was a Rego brand 9101C1 tank valve. Energy dispersive spectroscopy (EDS) analysis determined that the composition of valve body material was consistent with brass. The valve exhibited evidence of exposure to fire. The valve handle stem was found to be in the "off' position, although the handle itself had melted off. The male end of the valve was covered in a melted metallic material consistent in appearance with melted aluminum.

Another brass fitting was found attached to the female end of the valve. The end of the fitting was fractured. SEM examination of the fracture surface found microvoid coalescence fracture features consistent with overstress. The other end of the fractured brass fitting was attached to a female-female fitting, shown in Figure 3. EDS analysis determine this fitting to be galvanized steel often used in pipe or plumbing fittings. This fitting was attached to another steel male nipple fitting, attached to quick-release hose fitting that was attached to the fuel delivery hoses as shown in Figure 2. All of the fittings had some degree for fire related damage such as surface changes to the metal and sooting. The fuel hoses were heavily fire-damaged. The steel braiding was the only intact layer found. A majority of outer and inner sleeves were missing and presumed to have been burned away. The remaining pieces were

heavily charred and sooted. No other testing or examination was done on the fuel hoses due to the heavy fire damage.

Nancy B. McAtee
Investigator

Image No.:0809A00602, Project No.: 2008090008

Figure 1. Fuel control valve.

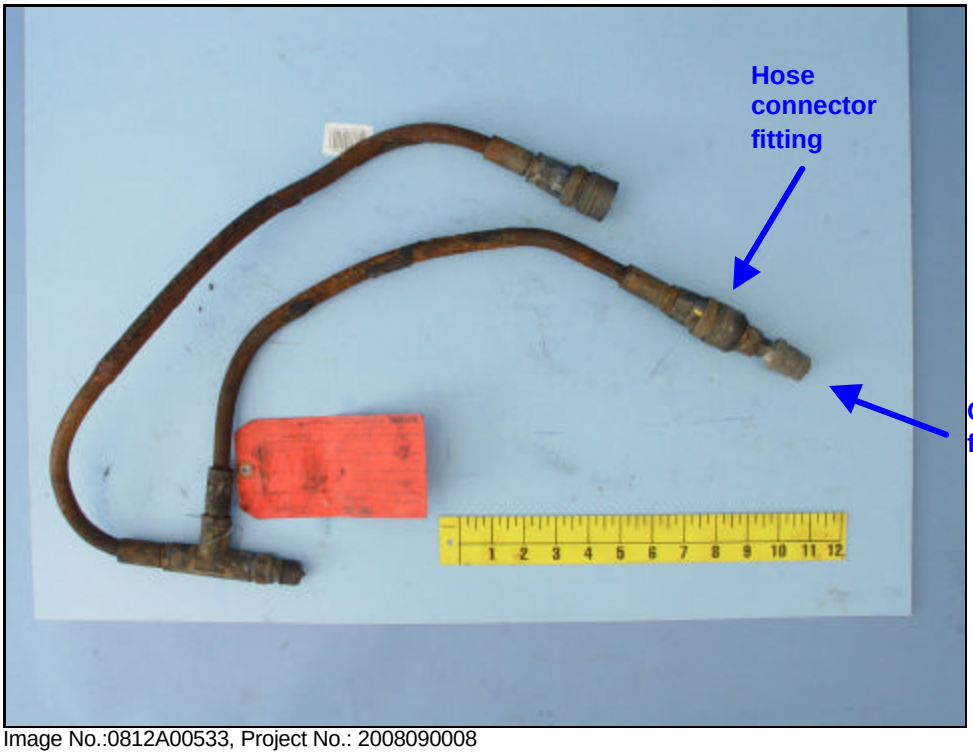

Image No.:0812A00533, Project No.: 2008090008

Figure 2. Fuel delivery lines.

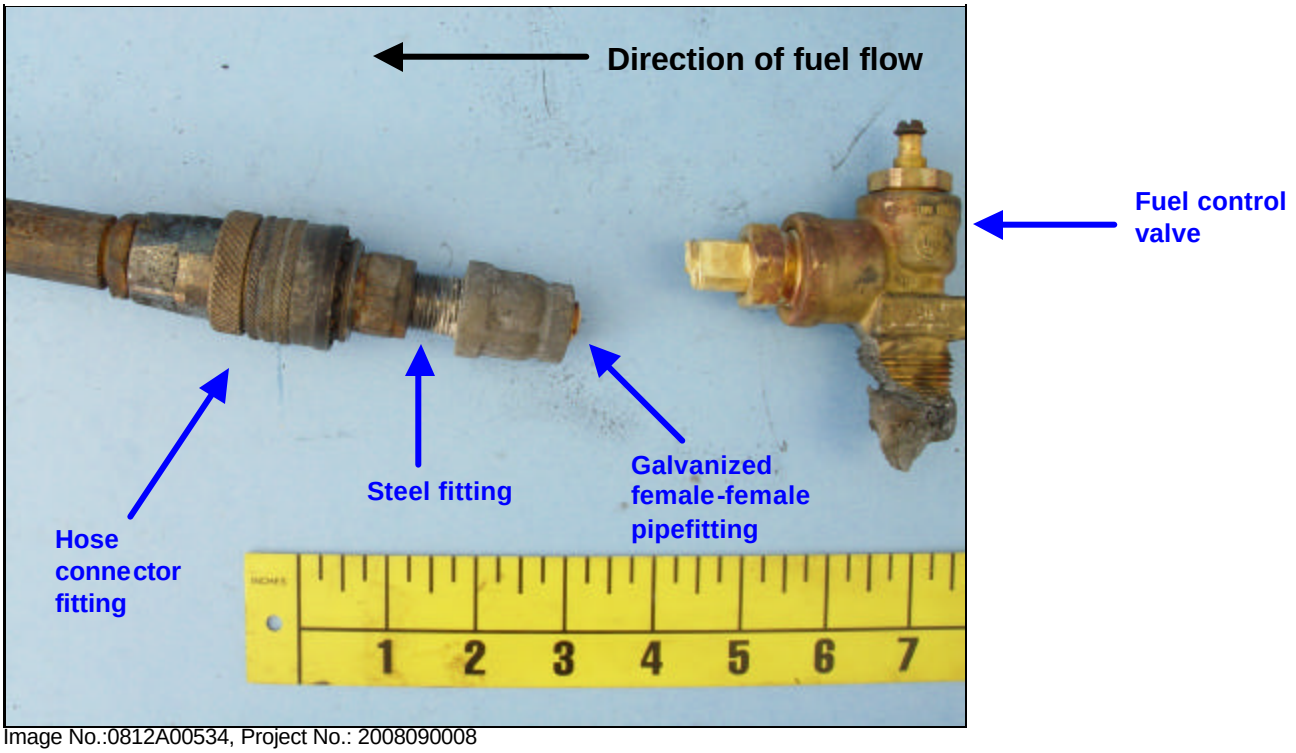

Image No.:0812A00534, Project No.: 2008090008

Figure 3. Fuel control valve and associated fittings.